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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,647	09/28/2001	Alfred I-Tsung Pan	10010865-1	1928
7590 03/10/2004			EXAMINER	
HEWLETT-PACKARD COMPANY			WILLS, MONIQUE M	
Intellectual Property Administration			ART UNIT	
P.O. Box 272400			PAPER NUMBER	
Fort Collins, CO 80527-2400			1746	

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,647

Applicant(s)

PAN ET AL.

en

Examiner

Wills M Monique

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 15-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 15-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This Office Action is responsive to the Amendment filed December 16, 2003. The rejection of claims 1,4,7,10, 13 & 14 under 35 U.S.C. §112, first paragraph is overcome. The rejection of claims 1-14 under 35 U.S.C. § 112 second paragraph is overcome. The rejection of claims 1 & 2 under 35 U.S.C. § 102 (e) as being anticipated by Heller 6,294,281 is maintained. Claim 15 is newly rejected under 35 U.S.C. § 102 (e) as being anticipated by Heller 6,294,281. The rejection of claims 4-6 & 16-17 under 35 U.S.C. § 102(e) as being anticipated by Berlowitz 2001/0038934 is maintained. The rejection of claim 1 under 35 U.S.C. § 102(e) as being anticipated by Berlowitz 2001/0038934 is overcome. The rejection of claims 7-12 & 18-21 are under 35 U.S.C. § 102(e) as being anticipated by Wagaman 6,331,220 is maintained. Claims 13-14 are cancelled. The 35 U.S.C. 102(e) rejection of 4-6 & 16 under Wagaman has been reapplied in light of Applicants amendment to include Hards et al. U.S. Patent 5,501,915 as evidentiary support. The rejection of claim 3 under 35 U.S.C. 103(a) as being unpatentable over Heller 6,294,281 is maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2 & 15 are rejected under 35 U.S.C. 102(e) as being anticipated by
Heller U.S. Patent 6,294,281.

Heller teaches a biological fuel cell comprising biological fluid such as blood, sap and other biological fluids or solids as the fuel for a bio cell (col. 3, lines 1-7). With respect to claim 1, the fuel cell is a liquid-type fuel cell having a fuel such as blood and hemoglobin (col. 3, lines 10-20) and a platinum anode (col. 4, lines 25-35). With respect to claim 2, the fuel may comprise hemoglobin (col. 3, lines 15-20). The prior art anticipates the instant claims as set forth. The limitation in claim 1, with respect to the fuel additive reducing CO poisoning to the platinum-based catalyst, is considered to be an inherent property of the hemoglobin additive in the fuel as set forth in the prior art, because Heller employs the same hemoglobin material set forth by Applicant.

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The limitation in claim 1, with respect to the platinum catalyst of the fuel cell, is considered to be an inherent property of the anode as set forth in the prior art, because Heller employs a platinum anode made from the same platinum material set forth by Applicant. In other words, the anodic material inherently catalyzes the electrochemical reaction because it is made of platinum. The limitation in claim 15, with respect to the fuel additive being prepackaged for field use, is considered to be an inherent property of the fuel as set forth in the prior art, because Heller employs a fuel where hemoglobin is part of the fuel composition. According to Applicant's specification on page 4, lines 1-9 a pre-packaged fuel is a fuel that contains the additive before use. The fuel of Heller, inherently contains the additive before use, because hemoglobin is part of the naturally occurring fuel composition.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 4-6, 16-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Berlowitz et al. U.S. Pub. 20010038934.

Berlowitz teaches a fuel cell system using emulsified fuel wherein water is added to the fuel to decrease the amount of CO to the catalyst (par. 8-9). With respect to claim 4, Berlowitz teaches providing a liquid-type fuel cell using a fuel and water emulsion (par. 1); and the fuel cell may be supplied liquid fuel through a pump/delivery system (par. 12). With respect to claims 5 & 6, the fuel contains a surfactant (par. 7) in amount less than 0.5wt% of the total emulsion weight (par. 17). With respect to claim 17, the surfactant may be non-ionic (par. 18). The instant claims are anticipated by the prior art as set forth. The limitation in claim 4 with respect to the fuel cell having an electrode, is considered to be an inherent property of the fuel cell as set forth in the prior art, because fuel cells must contain electrodes in order to generate electricity. The limitation in claim 4, with respect to the fuel cell having a liquid-catalyst interface, is considered to be an inherent property of the fuel cell as set forth in the prior art, because the fuel cell is a phosphoric acid fuel cell (par. 8). Phosphoric acid fuel cells have liquid phosphoric acid electrolytes interposed between catalyzed electrodes, thereby providing a liquid-catalyst interface. The limitation of claim 4, with respect to the fuel additive increasing wettability of the electrode and decreasing interfacial tension of the liquid-catalyst interface, is considered to be an inherent function of the fuel additive as set forth by the prior art, because Berlowitz and Applicant employ the same non-ionic surfactant as a fuel additive. The limitation

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in claim 16, with respect to the additive of the fuel being prepackaged for field use, is considered to be an inherent property of the fuel as set forth in the prior art, because Berlowitz employs a fuel where a surfactant is part of the fuel composition. According to Applicant's specification on page 4, lines 1-9 a pre-packaged fuel is a fuel that contains the additive before use. The fuel of Berlowitz, inherently contains the additive before use, because the surfactant is part of the fuel composition.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 7-12 & 18-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Wagaman et al. U.S. Patent 6,331,220.

Wagaman teaches a gas-generating liquid composition for use in fuel cells (col. 3, lines 50-55). With respect to claim 7, a fuel cell capable of utilizing the gas-generating liquid composition is provided (col. 3, lines 45-50) and ammonium

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thisulfate is added to the fuel to reduce dissolved oxygen in the fuel (col. 7, lines 22-26). With respect to claim 10, a fuel cell capable of utilizing the gas-generating liquid composition is provided (col. 3, lines 45-50) and a chelating agent may be added to the fuel to bind impure metal ions in the fuel (col. 7, lines 25-35). With respect to claims 8 & 11, the fuel may include minor additional components, such as a surfactant, oxygen scavenger and chelating agent (col. 7, lines 10-45). With respect to claims 9 & 12, these additives usually total less than 1 percent by weight of the composition (col. 7, lines 10-20). With respect to claim 19, the fuel may include a hydrazine salt, such as hydrazinium nitrate (col. 8, lines 60-65). With respect to claim 21, the chelating agent is ethylenediamine tetraacetic acid (EDTA), cyclohexanediaminetetraacetic acid (CDTA) or sodium salts of these compounds (col. 7, lines 25-35). The instant claims are anticipated by the prior art as set forth. The limitations of claim 10, with respect to the fuel cell having a catalyst and an electrolyte, is considered to be an inherent property of the fuel cell as set forth in the prior art, because all fuel cells by definition need electrolytes and catalyst in order to generate electricity. The limitation in claims 18, 20 & 21, with respect to the additive of the fuel being prepackaged for field use, is considered to be an inherent property of the fuel as set forth in the prior art, because Wagaman employs a fuel where the additives are part of the fuel composition. According to Applicant's specification on page 4, lines 1-9 a pre-packaged fuel is a fuel that contains the additive before use. The fuel of Wagaman, inherently contains the additive before use, because the

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additives are part of the fuel composition. Therefore, the instant claims are anticipated by Wagaman.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 4-6 & 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Wagaman et al. U.S. Patent 6,331,220.

With respect to claim 4, Wagaman teaches that fuel cells may use a gas-generating liquid composition as fuel (col. 3, lines 45-51). With respect to claims 5 & 6, the fuel may include a surfactant in an amount less than 1% by weight of the composition (col. 7, lines 10-45). The instant claims are anticipated by the prior art as set forth. The limitation in claim 4, with respect to the fuel cell having a liquid-catalyst interface, is considered to be an inherent property of the fuel cell as set forth in the prior art, because Wagaman teaches the use of liquid fuel as a reactant in a fuel cell (col. 3, lines 45-51). The limitation in claim 4, with respect to the fuel cell having an electrode, is considered to be an inherent property of the fuel cell as set forth in the

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prior art, because fuel cells must contain electrodes in order to generate electricity. The limitation of claim 4, with respect to the fuel additive increasing wettability of the electrode and decreasing interfacial tension of the liquid-catalyst interface, is considered to be an inherent function of the fuel additive as set forth by the prior art, because Wagaman and Applicant both employ surfactants as fuel additives. The limitation in claim 16, with respect to the additive of the fuel being prepackaged for field use, is considered to be an inherent property of the fuel as set forth in the prior art, because Wagaman employs a fuel where a surfactant is part of the fuel composition. According to Applicant's specification on page 4, lines 1-9 a pre-packaged fuel is a fuel that contains the additive before use. The fuel of Wagaman, inherently contains the additive before use, because the surfactant is part of the fuel composition. The prior art, Hard et al. U.S. Patent 5, 501,915, is made of record and not relied upon, but is considered pertinent to Applicant's disclosure. Hard et al. U.S. Patent 5,501, 915 is evidence that fuel cells inherently have a liquid-catalyst interface (col. 2, lines 1-5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heller U.S. Patent 6,294,281 as applied to claim 1 above.

Heller teaches a biological fuel cell comprising hemoglobin in the fuel, as described hereinabove.

The reference is silent to hemoglobin being present in the range of 0.001-1% by weight of the fuel.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the hemoglobin in said amounts, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. As taught by Heller in column 3, lines 10-20, the skilled artisan recognizes that the amount of hemoglobin directly effects electrooxidation in the operation of the fuel cell.

Response to Arguments

Applicant asserts that Heller is patentably distinct from the subject invention because the reference is allegedly silent to a platinum-based catalyst. This argument is not persuasive, as Heller teaches that the anodic material may include common catalyst such as gold, palladium and platinum (col. 4, lines 25-30) necessitated by claim 1.

Applicant asserts that Berlowitz is not anticipatory because the reference is silent to a platinum based catalyst and liquid/catalyst interface. With respect to the platinum catalyst, Applicant is correct, the reference does not anticipate claim 1, because Berlowitz is silent to a platinum catalyst. Concerning the liquid-catalyst interface, this property is inherent in all liquid type fuel cells. Berlowitz teaches the use of a phosphoric-acid fuel cell (par. 8), which by definition contain a liquid electrolyte contacting a catalyzed electrode. Therefore, the basic structure of the a liquid-type fuel cell inherently forms a liquid-catalyst interface and Berlowitz remains anticipatory with respect to claim 4 and the remaining claims depending therefrom.

Concerning Wagaman, Applicant asserts that the reference does not anticipate the subject invention because it fails to disclose a liquid-type fuel cell. This argument is not persuasive, as Wagaman teaches a liquid fuel composition (abstract) that may be employed in a fuel cell (col. 3, line 51). According to Applicant's instant remarks on Page 9, line 8, a liquid-type fuel cell is a fuel cell that employs liquid or gaseous fuel.

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Therefore, the fuel cell of Wagaman that employs liquid fuel is inherently a liquid-type fuel cell.

With respect to the amount of hemoglobin necessitated by claim 3, the Applicant asserts that there is nothing to show that the fuel cell disclosed in Heller would operate under these conditions. The Examiner fails to see how the references negates operating under these conditions. Heller's disclosure enables the use of hemoglobin or myoglobin as fuel components and does not teach away from the amount of hemoglobin that may be employed in the fuel composition.

With respect to claim 15, the Office Action is made non-final because claim 15 erroneously was not included in the original Office Action.

Conclusions

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 571-272-1302. The fax phone

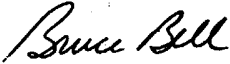
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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mw

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